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PROCEEDINGS OF THE CLUB

WEDNESDAY, FEBRUARY 26, 1902

This meeting was held at the Botanical Garden ; Dr. Britton in the chair ; 23 persons present.

Two new members were elected, Mr. Oscar Krause, 349 Seventh Avenue, New York City, and Dr. Vincent Baudendistel, Taurus P. O., West New York, N. J.

The first paper, by Dr. John K. Small, on North American Genera of the Cassiaceae, will soon appear in print.

Discussion followed regarding *Poinceana*, participated in by Dr. Britton, Dr. Underwood and Dr. Small.

The second paper by Dr. Arthur Hollick on the Flora of Provincetown, Mass., was accompanied by a series of maps, charts, views, and dried specimens. Dr. Hollick discussed the relation of this flora to the local geology, and remarked of Cape Cod that the older part from the Highlands of Truro southward consists of glacial drift ; the recent part, through Provincetown to the north and west, consists of drifted sands, all postglacial, derived from the older portion and due to the general trend of the tides and currents northward. The result is to form a line of shoals along the coast now united into an outer beach ; the space between this and the shore is now filling in and becoming swamp, and a new outer line of shoals is already forming.

Nothing larger now grows on the sand-dunes than small stunted pines and oaks ; but Bradford's account indicates that in 1620 it was covered with large deciduous trees. Acts to prevent further cutting of timber were passed in 1720 and later. At present, the town of Provincetown, to prevent further loosening of the sand, forbids passing out of certain beaten paths in the wooded district. Hundreds of acres have been replanted by the state, the lands of Provincetown having been successively reserved as common property of the colony, province and state. It is only within a few years that the land in actual occupation in and near the town has been granted by the state to the occupants.

In reclaiming the sands, *Ammophila* or beach grass has been planted first, then bayberry, then *Pinus rigida*, the native pine of the region. Sand-loving species have since become well-established as an undergrowth, but the new growth shows no signs of ever equaling the original. The same is true on Block Island, where the original forest had become established while the island was connected with the mainland.

The sand flora is remarkable for the great areas closely covered with *Arctostaphylos Uva-Ursi*; this with *Rubus hispidus* and some plants of *Corema Conradianii* is the chief means of forming the sand into turf.

The species collected in Provincetown numbered 94, among which *Corema Conradianii* seems not to have been recorded from that town since Thoreau's visit in 1849.

The third paper was a note by Dr. A. P. Anderson on *Pachyma Cocos*—the Tuckahoe or Indian Bread. A specimen was exhibited, a mass about two feet long, made up of apparently annual sections indicating ten years' growth. Similar specimens have been found in the South along roots of oak and other trees, usually about two feet below the surface, obtained chiefly when clearing land of old stumps. Undoubtedly a fungus growth, and probably a sclerotium, it has never been seen to produce spores. The whole substance consists of a septated mycelium with abundance of white pectose. A species probably the same occurs in Europe; another in China has been used there for many centuries in medicine. Experiments by Dr. Anderson showed that portions separated from the roots of the host-plant were alive in the soil after a half year. Where the cortex of the *Pachyma* was removed it was renewed.

Rev. L. H. Lighthipe followed with a communication regarding Mr. C. L. Pollard's new species of violet—*Viola Angellae*. He exhibited a water color drawing showing the spring and summer forms of the plant. An excursion for its collection in Orange Mountains was suggested.

EDWARD S. BURGESS,
Secretary.

TUESDAY, MARCH 11, 1902

The meeting was held at the College of Pharmacy ; 20 present ; Dr. Britton in the chair.

Three new members were elected : Miss Nina L. Marshall, Miss Ely's School, Riverside Drive, N. Y.; Miss Palmyre C. Clarke, N. Y. Botanical Garden ; Miss Lillie Angell, 19 Minton Place, Orange, N. J.

Seven resignations were accepted.

Professor Underwood reported a reply from the Syracuse Botanical Club indicating that the members would probably coöperate in the proposed July 4th excursion.

The first paper, by Edward S. Burgess, was on "Plant Illustration in the Middle Ages," being a portion of a contribution to the history of early botany soon to be printed among his Aster Studies. It was illustrated by examples from his library of early woodcuts intended to represent *Aster*, dated 1485, 1499, etc. (long anterior to the first adequate drawing of *Aster Amellus* L., that of Fuchs in 1542); and also examples of the value once put upon the vellum for manuscripts, showing an Italian manuscript dating perhaps from before 1200, in which torn vellum had been carefully mended before writing. He also exhibited a series of heliotypes, representing about 25 pages of unpublished mediaeval manuscript containing drawings of plants, and nearly as many pages more of decorated text ; photographed by Professor Giacosa, of Turin, to accompany his recent edition of certain of the Salernitan masters (*Magistri Salernitani*, Turin, 1901). Early plant figures long made it their one aim to show the outline. Chief attention was given to leaves, stem and branches. Flowers were less often and less successfully indicated. The characteristic *habit* of a plant, however, was often caught very perfectly. Figures were copied often with scrupulous care from one manuscript to another. Several causes tended, however, to their degeneration. Pliny charges the blame for the imperfect plant-figures of his time upon lack of skill of copyists. Some of the worst among later errors were those of copyists who were attempting copies of plants they had never seen ; as in early

Anglo-Saxon figures of *Aster* and other classic plants. In other copyists a desire for balance and symmetry overcame their fidelity to the original, so that they conventionalized their plants; as seen strongly in later Italian work exhibited, developed in the 14th century from the Salernitan school; and as retained in early printing, Italian woodcuts of 1499 inheriting the same tendency. A fourth source of error in plant-figures was the mediaeval love of the marvelous, so that many copyists outdid their text in depicting fictitious monstrosities; as in the 15th century pictures of mandrakes, Tartarian lamb, etc.

Some of the earliest plant-figures of which we know were those made by Cratevas, a Greek physician to Mithridates, about 100 B. C. Something of their character and form probably still survives to us in certain illustrated manuscripts of Dioscorides, of the fifth century, with figures evidently copied not from each other, but from an earlier common source. There is great need in the interests of the history of botany, that the project of publishing the figures of the Anician Vienna codex, now laid aside for nearly two centuries, should be revived and carried to successful issue.

In the discussion following this paper, Dr. Britton, Dr. Underwood, Professor Lloyd and Mr. Eugene Smith participated.

The second paper was by Mr. W. A. Cannon, entitled "Observations on the Structure of the ovular Integuments of *Dichlostemma capitatum*."

It was stated that the entire inner cell-wall of the outer integument and, also, the basal portion of the inner wall of the inner integument were cuticularized, and colored figures were shown, indicating the final resorption of the inner integument by the developing endosperm. The haustoria of the mistletoe penetrate the oak cortex by secreting a ferment which dissolves the neighboring cell-walls; excepting certain lignified cells which may become incorporated in the haustoria. So also in this liliaceous plant, better known to many as *Brodiaea*, the enzyme of the developing endosperm is unable to dissolve the cuticularized membrane of the integuments, a fact which appears to limit the extension of the endosperm.

Professor Lloyd in discussion suggested that different parts of the ovule may be able to secrete different kinds of enzymes, ready to attack different kinds of tissue simultaneously; at least three different enzymes have been obtained by mechanical means from the yeast-plant. In certain of the Rubiaceae, the formation of enzymes in the megaspore antedates fertilization; and that the pollen-tube develops an enzyme is well known.

The final contribution of the evening was by Dr. N. L. Britton, on the morphology of the flower of *Dichondra*, a plant commonly assigned to the Convolvulaceae. A specimen is now in full blossom under glass at the Botanical Garden, and its little rotate flowers which resemble those of a saxifrage are highly incongruous with those of the Convolvulaceae.

EDWARD S. BURGESS,
Secretary.

NEWS ITEMS

Professor Charles R. Barnes, of the University of Chicago, sailed from New York for Europe on March 22. He plans to be abroad for about nine months.

Professor F. S. Earle left New York on March 24 to spend two months in the mountains of New Mexico and western Texas, making collections for the New York Botanical Garden.

Mr. R. M. Harper has been appointed temporary aid in the herbarium of the U. S. National Museum. After a month he will proceed to Georgia to continue his field work on the flora of that state.

The moss collections of the late Mr. David A. Burnett, of Bradford, Pa., have been purchased by Mrs. Annie Morrill Smith, and presented to the museum of the Brooklyn Institute of Arts and Sciences.

Dr. D. T. MacDougal returned to New York on March 13 from a six weeks' visit to Arizona and the State of Sonora, Mexico, bringing back several large living specimens of *Cereus giganteus* and other living plants peculiar to that region for the conservatories of the New York Botanical Garden.